fortune to meteorological science has for the present been averted.

Scottish Meteorological Society, 122 George Street, Edinburgh, July 27, 1898.

It was announced last week in your columns that the Ben Nevis Observatories were to be closed in October next for want of funds. It gives me much pleasure to announce now that this will not be the case. I have received a letter from Mr. J. Mackay Bernard, Kippenross, in which he promises to give 500*l.* "in order that the Observatories may be carried on for another year." The record of observations for one whole year will thus be the result of Mr. Bernard's great generosity.

He expresses a hope in his letter that before the end of that year arrangements may have been made for the permanent carrying on of the work by State aid, and his very liberal and prompt action makes the Directors more hopeful than they were that this desirable end may yet be reached. But if the State does not charge itself with the maintenance of these Observatories, then Mr. Bernard's example may perhaps be followed by others, so that the Directors may at least be able to obtain continuous and complete observations for the eleven years of a sun spot period. This would mean the making of an important addition to knowledge by Scotland, and in that aspect Mr. Bernard is patriotic as well as liberal.

In conclusion, allow me to thank you, and the press generally, in the name of the Directors, for the sympathetic attitude which has been taken by the newspapers towards the work carried on by the Scottish Meteorological Society.

ARTHUR MITCHELL, *Hon. Sec.*

The question of the position of the Ben Nevis Observatories came up in the House of Commons on Friday last in connection with the annual vote of 15,300*l.* to the Meteorological Council for meteorological observations. As this sum (nearly 3000*l.* of which is annually expended upon telegraphic reports and storm warnings) is for observations throughout the United Kingdom, Scotland at present receives a proportional part of it, and a grant of 350*l.* is made annually for the two Ben Nevis Observatories—the high level observatory receiving 100*l.* and the low level observatory 250*l.* Mr. Hanbury, Financial Secretary to the Treasury, has undertaken to ascertain whether a larger amount could not be granted to Scotland out of the Parliamentary vote in respect of the observatory on the summit of Ben Nevis, the suggestion being that a grant of 500*l.* a year should be made for five years. In a leading article in Monday's *Times*, the valuable work carried on at the observatory is pointed out, and the hope is expressed that Mr. Hanbury will succeed in effecting such a redistribution of the grant to the Meteorological Council as will provide for its further prosecution and development. The value of the observatory as a meteorological station is beyond question, and something should certainly be done to place its work upon a permanent footing.

NOTES.

THE *Standard* of Friday last contained the following telegram from its Vienna correspondent:—"On the closing day of the International Congress for Applied Chemistry, an interesting paper was read by Dr. Leo Lilienfeld on the synthesis of albuminous substances. By means of the condensation of phenol and amido-acetic acid with phosphoric oxychloride, the lecturer has succeeded in producing pepton, a substance which, it had hitherto been believed, could be obtained only from organic substances. In order to dispel any doubt as to the possibility of thus making artificial albumen, the lecturer carried out the entire process in the presence of the assembled chemists, and then demonstrated the identity of artificial and natural albumen by means of reactions." This announcement is of great interest to chemists, and we shall give an account of the synthesis next week, when further details will probably be available.

NEWS has just been received of the death of Prof. James Hall, the veteran State Geologist of Albany, New York.

UPON the recent retirement from the Indian Medical Service of Brigade-Surgeon Lieutenant-Colonel D. D. Cunningham, F.R.S., Professor of Physiology, Medical College, Calcutta, the Government of India have placed on record their high appreciation of the eminent services rendered by him to the State. Dr. Cunningham was appointed to the chair of Physiology in the Medical College at Calcutta in 1879—a post which he continued to occupy till he was compelled to take sick leave last year. By his zeal and devotion to his work he introduced a high standard of efficiency in the teaching of physiology in the College. He was the first professor to demonstrate histological preparations to the students in a systematic way, and also the first to teach them the practical use of the microscope. He twice received the thanks of the Government of India for reports submitted by him in collaboration with the late Dr. Lewis. Dr. Cunningham's most recent investigations have been connected with snake-bite and the discovery of a remedy. In a letter to the Director-General of the Indian Medical Service, the Governor-General writes:—"By the retirement of Dr. Cunningham the Government of India lose the services of one of the most distinguished of the scientific men who have served them, the Indian Medical service one of its most eminent members, and yourself an invaluable adviser. He carries with him on his retirement the warmest thanks of the Government of India for his long and distingushed services."

SOME of the objections to the system of granting indulgences to anti-vaccinationists were pointed out in last week's NATURE. Since then the Vaccination Bill has had an eventful history. It came before the House of Lords in Committee on Thursday last, and the second clause—the conscience clause—providing parents with a means of exemption from penalties for the non-vaccination of their children, was rejected. The amended Bill had therefore to go back to the House of Commons, where it was considered on Friday, and a motion to disagree with the Lords' decision to leave out the conscience clause was carried. In consequence of this vote, the Bill again came before the Upper House on Monday, with the result that the conscience clause was reinstated—the Lords reversing on Monday their decision of Thursday last. It may be expedient to pass the Bill in its complete form, but the principle of permitting conscientious anti-vaccinationists to put themselves beyond penalties other than those which their neglect will bring upon them, is unsound and dangerous.

IN view of the proposed alterations in the laws relating to vaccination now contemplated in the Bill before Parliament, the Council of the Royal College of Surgeons of England have reaffirmed the following resolution adopted by them in 1893 and forwarded to the Royal Commission on Vaccination, viz.:—"We, the Council of the Royal College of Surgeons of England, desire to put on record at the present time our opinion of the value of vaccination as a protection against small-pox. We consider the evidence in favour of its life-saving power to be overwhelming, and we believe, from evidence equally strong, that the dangers incidental to the operation, when properly performed, are infinitesimal. Experience has satisfied us that, even when vaccination fails to afford complete exemption from small-pox, it so modifies the severity of the disease as not only to greatly reduce its mortality but to lessen the frequency of blindness, disfigurement, and other grave injuries. We should therefore regard as a national calamity any alteration in the law which now makes vaccination compulsory. We are, moreover, firmly convinced that re-vaccination is an additional safeguard and should be universally practised."

HERR ALBIN BELAR, director of the seismological station in the k.k. Oberrealschule at Laibach, Austria, is making an endeavour to collect information with reference to the earthquake which occurred in Dalmatia on July 2, and caused great destruction in the town of Sinj. The disturbance was recorded at Laibach by four instruments, and a number of observations and pictures referring to the earthquake have been collected there. It is proposed to publish these records, together with any other papers which may be obtained, either on the recent earthquake, or on the nature of earthquakes generally, and recent seismology, in a work by the sale of which it is hoped to obtain funds for the relief of the people who have suffered losses by the shock. Contributions intended for this work may be in German, French, Italian, or English, and should be sent to Herr Belar before the middle of December.

MANY Polish men of science have signed a protest against the action of the Prussian authorities at Posen (Poznań) in prohibiting them from attending the meeting of the Polish Association for the Promotion of Medical and Natural Knowledge, which it was proposed to hold in that town at the beginning of the present month. Early in July the organising committee of the meeting was informed by the Director of Police that persons of Polish nationality would not be permitted to take part in the proceedings, and that if they went to Posen they would be expelled from the country immediately. For thirty years the Association has held its meetings without any difficulties, and in the year 1884 a meeting was held in the town of Posen itself. The recent action, directed as it was against men whose only object was calm and friendly intercourse, violates the legitimate claims of science, and discourages scientific investigation in Poland. It is unfortunate that intellectual enterprise should be made to suffer on account of strained relations between certain members of German and Polish nationalities. The protest against the measures taken by the Prussian police authorities has been signed by most men of science in Cracow and Lemberg, and forwarded to the Polish members of the Austrian Parliament.

THE death is announced of Prof. George Ebers, author of numerous works on Egyptology. Prof. Ebers was born in Berlin in 1837. He studied first at Göttingen, and then in Berlin, where he came under the influence of the egyptologists Brugsch, Lepsius, and Böckh. After taking his degree at Jena, he undertook a journey of a year's duration in Egypt and Nubia, and on his return in 1870 he was appointed to a professorship at Leipzig. In 1872 he visited Egypt for a second time, and on this occasion made his discovery at Thebes of the celebrated papyrus which is known by his name.

PARTICULARS of the career of the late Dr. Johan Eliza de Vry, the eminent Dutch pharmacist and quinologist, who died at The Hague on July 30, in his eighty-sixth year, are given in the *Chemist and Druggist*. Dr. de Vry was born on January 31, 1813, at Rotterdam. His first appearance in the literary world was with a Dutch translation of Heinrich Rose's "Handbook of Analytical Chemistry," which was at that time a famous text-book. This work brought him into direct correspondence with many of the leading chemists of the day, among these being Pelletier, for whom Dr. de Vry always entertained the utmost reverence. It was through Pelletier's influence that his attention was especially directed to quinine and the cinchona alkaloids generally, concerning which he was to become one of the chief living authorities. De Vry took the degree of Ph.D. at Leyden University in 1838, and was subsequently appointed teacher of chemistry and pharmacy in the Medico-Pharmaceutical College of his native city. In 1850 he sold his pharmacy, which he had carried on for eighteen years, and devoted himself to scientific work exclusively. At that period he published an immense number of papers on pharmaceutical subjects—nitroglycerin, morphia, red phosphorus, cherry-laurel water, and cinchona, occupying his attention. In 1856 he was elected an honorary member of the Pharmaceutical Society of Great Britain, and in 1857 he went to Java on a commission by the Dutch Government as Inspector of Chemical Investigation. He stayed in Java six years, and it is universally admitted that his labours materially assisted in the development of the cinchona industry there. After finishing his labours in the island, Dr. de Vry visited India, and gave much assistance to the Indian Government in regard to the cultivation of cinchona and the extraction of the alkaloids there. For his services in this direction he was rewarded by the Queen of England with the C.I.E. in 1880. In 1895 he was awarded the Hanbury gold medal given by the Pharmaceutical Society of Great Britain, and only a few weeks before his death the University of Utrecht bestowed upon him the honorary degree of M.D.

THE British Mycological Society's second annual week's fungus foray will be held in Dublin from September 19 to 24.

A SEVERE shock of earthquake, lasting five seconds, occurred in Messina at 2.33 a.m. on Saturday, August 6, and was followed by three weaker shocks.

THIS year's meeting of the French Association for the Advancement of Science opened at Nantes on August 4. M. E. Grimaux, the president, delivered an address on the chemistry of the infinitely small, referring more particularly to Pasteur's researches. About 30,000 francs were voted as grants in aid of scientific work, 13,126 francs being from the funds of the Association, and 18,800 from the Girard legacy fund.

THE Government of British Guiana has lately taken steps of great practical utility in arranging for geological surveys in the gold districts. From a report on the gold and forest industries of British Guiana we learn that a survey has already been conducted by Prof. J. B. Harrison in the north-west district, and the results embodied in a report, while an additional report on the petrology of the district is awaiting publication. A further expedition to examine the formations of the Potaro-Conowarook district is now being organised. The great importance of this work will be recognised in view of the fact that there are no trustworthy official reports on the geology of British Guiana in existence. The experience of the past ten years has proved that British Guiana is rich in gold; and what is now needed is the importation into the Colony, and the adoption of, mechanical washing appliances for alluvial gold. By such means deposits of alluvial gold, vast areas of which are known to exist, but would not pay to work by the means now employed, could be made to produce large quantities of gold. During the year ending on June 30, the amount of gold exported from the Colony was 117,265 ounces, or a decrease of 10,326 ounces upon the output of 1896–97. This serious decrease is partly ascribed to exceptionally bad weather, and partly to the exhaustion of alluvial workings in the Barima district.

PROF. KARPINSKY contributes to the latest issue of the *Bulletin* of the St. Petersburg Academy of Sciences an interesting note on hail observed on April 30, 1897, by M. Czernik, near Ivangorod, in Russian Poland. The hail was falling that day from two nearly quite opposite directions, and was of two entirely different kinds. One variety consisted of large grains of a pear-like shape, and of a peculiar structure; while the other consisted of smaller, transparent grains, which had the shape of flattened ellipsoids. These latter contained nothing, but the former had in their central opaque portions black granules which proved, on chemical analysis, to consist of iron, with traces of nickel and cobalt, and silicon. These granules were sent to the Academy, and Prof. Karpinsky analysed them. The powder obtained from these granules consisted chiefly of magnetic iron oxide, which had been formed through the oxidation of magnetic iron; the latter could be seen very well. Moreover, the granules contained augite and, probably, sulphuretted iron, and some other substances not yet determined. Besides iron, they also showed traces of nickel and sulphur. "Such a composition," the Russian professor concludes, "leaves not the slightest doubt about the cosmic origin of the granules contained in that hail." It is interesting to note that, some time ago, M. Czernik collected at the same spot hail which contained granules of volcanic ashes from Vesuvius.

ADMIRAL MAKAROFF, the well-known explorer of the North Pacific, has lately made the proposal to reach the North Pole by means of powerful ice-breakers. The proposal sounds rather strange at first, but the Russian Admiral bases it on sound scientific reasoning and on a good deal of actual experience. Ice-breakers have been used in Russia (at Cronstadt) since 1864, and lately great progress was achieved in their construction in America by arming such vessels with two screws at the stern and a third one at the stem. The American ice-breaker, *Ste. Marie*, 3000 horse-power, easily sails through ice 2½ feet thick, and pierces ice-walls 15 feet high. Still more powerful ice-breakers have lately been built in America and in this country for the Trans-Siberian railway and the port of Vladivostok. Taking into account that, according to Nansen, the ice-walls (*toroses*) in the Arctic basin seldom attain the height of 25 feet, and that the polar sea is free from ice over, at least, one-third of its surface, while all the ice is weakened in summer by thawing, and especially by interior canals due to accumulations of salt, and by crevices, Admiral Makaroff concludes that an ice-breaking steamer of 20,000 horse-power would overcome all the difficulties which polar ice may oppose to her progress. The distance between the latitude of 78° N. to the pole being 720 miles, he calculates the various speeds at which such a steamer could make her way through ice of various thicknesses from four to seven feet, and he finds that the total distance could be covered in twelve days. Moreover, instead of one ice-breaker of 20,000 horse-power, it would be advantageous to have two such vessels of 10,000 horse-power each, it having lately been proved by actual experiment in Russia that two ice-breakers placed one behind the other, and the rear one pushing the front one by means of a special wooden frame, act as effectively as one single ice-breaker of a double force. Admiral Makaroff's proposal is, therefore, to build two special ice-breakers of 6000 tons and 10,000 horse-power each, provided with stem screws, and to force a way through the ice to the pole.

A SHORT account of a recent research, by Prof. Marinelli, on the progressive increase of the area of the Po delta is given in the *Geographical Journal.* From a comparison of the Austrian map of about 1823 with the result of modern surveys carried out in 1893, Prof. Marinelli is led to the conclusion that the mean annual increase during those seventy years has been about ·762 sq. kilom. (·293 sq. miles). Taking all known data into consideration, the estimated total increase during six centuries amounts to 516 sq. kilom. (198 sq. miles), which means that, by the action of one river alone, Italy has in that period gained no less than $\frac{1}{600}$ of its previous area, while recent surveys show that the increase is actively maintained at the present day. At the end of his article Prof. Marinelli gives some notes on the length of time which would probably be required to fill up the whole of the Northern Adriatic above 44° 45′ N. lat. The disposition now displayed by the mouths of the Po to bend in the direction of the axis of the gulf introduces a special element of uncertainty, but the conclusion is that the time required would certainly exceed 100 centuries, and would probably be more than 120.

IN connection with the reports which have appeared from time to time that Andrée's and other balloons have been sighted in the distance, it is worth while to direct attention to an observation recorded by Mr. F. F. Payne in the Canadian *Monthly Weather Review.* Looking at the sky one afternoon, Mr. Payne saw a large, grey, pear-shaped object sailing rapidly across, immediately behind a thin stratum of cirro-stratus cloud. At first the object was taken for a balloon, its outline being sharply defined, and its shape and size exactly corresponding to one; but as no cage was seen, it was concluded that it must be a mass of cloud, and after watching it for about six minutes, its mass became less dense and finally it disappeared. Whilst no whirling motion could be noticed, this balloon-like mass was undoubtedly of cyclonic formation, appearing less elongated when viewed at a distance probably of a mile and only about 30° from the zenith. The observation suggests an origin for strange war balloons and other aerial machines occasionally reported as having been sighted.

THE Quarterly Summary of the *Weekly Weather Report*, issued by the Meteorological Council for the months April to June last, show that the rainfall for that period has been above the normal amount in all districts. The mean for the wheat-producing districts was 6·5 inches, against 5·8 inches for the thirty-three years 1866-98; and the mean for the grazing, &c., districts was 9·2 inches, against 7·4 inches for the same period. For the whole of the United Kingdom the amount was 7·9 inches, as compared with 6·6 inches for the thirty-three years in question. Reckoning from the beginnng of the present year the rainfall to the end of July is, however, deficient in all districts save three—viz. the north of Scotland (where the excess amounts to 7 inches), the north-west of England, and the north of Ireland. The greatest deficiency is in the Midland counties, where it amounts to 5 inches. The general deficiency is due to the scarcity of rain in the first quarter of the year; and during the past month the fall has been, generally, much below the average, amounting to only about one-tenth of the average in the Scilly Islands.

THE remarkable sounds known as "mist pouffers" and "barisal guns," heard in many parts of the world at sea and near coasts, have frequently been described in these columns. The U.S. *Monthly Weather Review* (April) contains communications by Mr. Samuel W. Kain and others, which show that these sounds are very frequent on fine, calm summer days in the Bay of Fundy. Prof. Cleveland Abbe points out that the descriptions given of these oceanic noises show that sometimes they have precisely the same characteristics as the noises that may be heard in an aquarium when one stands alongside of a large glass tank and watches the motions of the drum fish. The salt water drum fish (*Pogonias chromis*) is common on the Atlantic coast of the United States, and other varieties will doubtless be found in other parts of the world. A large drum fish will give out a sound that may be heard a long distance, and it is suggested that some of the sounds which have been heard may have been produced by this or another fish. Prof. Abbe thinks that the noises proceeding from the ocean have probably very different characters and origins; some are due to the drum fish; others are made by the breakers dashing on rocky cliffs, whence heavy thuds spread for several miles through the air and many miles further through the ocean; others are due to the cracking of rocks in ledges near the surface, such as those on which lighthouses are built; others, finally, are occasionally due to genuine earthquakes occurring at the bottom of the neighbouring ocean. It is highly probable that a careful collation of observations from many stations in any given locality, such as the Bay of Fundy, will throw a clear light upon the locality whence the noises emanate.

THE locust disease fungus cultivated by Dr. Edington, director of the Bacteriological Institute, Grahamstown, for the purpose of destroying locusts, appears to be giving satisfactory results. A writer in the Cape *Agricultural Journal* states that he gave a number of healthy locusts (*Voetgangers*) internal doses of liquid in which cultures of the fungus had been dissolved, and afterwards placed them among the locusts at the head of three large swarms. On the fourth day after, numbers of locusts died, and on the seventh day after the introduction of those infected, the three swarms were entirely destroyed.

BACTERIAL cultures have been made on almost all vegetables, but the potato and the carrot are the principal ones which are in daily use in bacteriology. M. Roger has, however, says the *Lancet*, reported to the Paris Society of Biology that in his opinion the artichoke possesses several advantageous qualities in this respect. Nothing is more simple than to prepare it for the purpose. After having stripped off the scales the thick part is cut up into little cubes, care being taken to preserve the fibres (*foin*). The pieces are placed in tubes plugged with damp wadding, the fibres being uppermost, so that the culture medium is represented by a fleshy mass surmounted by a sort of tuft. When the wadding is inserted the whole is heated in an oven to 115° C. for a quarter of an hour. In making the inoculation the germs must be deposited at the point of insertion of the flowers. Speaking at the same meeting of the Society of Biology, M. Carnot mentioned that he had ascertained that if a small quantity of liquid derived from a previous culture of Koch's bacillus is added to the ordinary culture media before they are inoculated with tuberculous material the effect is to hasten the growth considerably. In practice the same result is obtained by adding some drops of tuberculin to the culture media. If, on the contrary, the quantity of tuberculin is increased—if, for instance, thirty drops are added to a culture instead of five or six—the culture either does not undergo development or else its development soon stops.

A REMARKABLE testimony to the effectiveness of Prof. Haffkine's system of inoculation as a plague preventive is published in a report on the inoculations among the Khoja community of Bombay, referred to in the *Pioneer Mail*. His Highness Aga Khan, the head of the community, was himself inoculated as an example to his followers, and he established an inoculation station at Mazgaon, at which 5000 Khojas were inoculated between December 1897 and April 20, 1898, 184 other Khojas being inoculated in municipal stations. The daily strength of the inoculated for the period was 3184. It is calculated that there were 9516 uninoculated persons in the community, and among these there were 77 deaths from plague and 94 from other causes during the period mentioned. Among the 3184 persons inoculated during this period there were three deaths from plague and four deaths from other causes. These are the most striking results observed up to the present time. Eliminating the five deaths from plague and the fifty-six deaths from other causes which occurred among uninoculated persons under the age of three or over sixty, the figures are still sufficiently remarkable. There is a difference of 89·7 per cent. of deaths from plague in favour of the inoculated part of the community, and of 73·3 per cent. of deaths from other causes. Prof. Haffkine is justified in saying that, making allowance for inaccurate classification, and admitting that some of the deaths among the uninoculated may have been those of sickly persons who feared to undergo the operation, the results indicate that, besides being a protection against plague, this inoculation influences favourably the resistance to certain other diseases, a fact with regard to which exact material is being accumulated at the Research Laboratory at Bombay.

PROFS. LUMMER AND PRINGSHEIM have communicated to *Wiedemann's Annalen* the results of their determinations of the ratio of the specific heats of certain gases. These results were obtained from the relationship between temperature and pressure in an adiabatic expansion of the gas, a new form of bolometer being employed in the measurement of temperature. The final values obtained for the ratio in question are: for air, 1·4025; for oxygen, 1·3977; for carbonic acid, 1·2995; and for hydrogen, 1·4084. These values are rather greater than those obtained by the same writers in 1887, when a silver wire 0·04 mm. thick was used in the bolometer.

THE problem of the flow of water in uniform pipes and channels, said by Saint Venant to constitute a hopeless enigma, forms the subject of a comprehensive paper by Mr. G. H. Knibbs in the *Journal and Proceedings of the Royal Society of New South Wales* (xxxi.). The formulæ used by engineers in general are shown by the author to be systematically defective, even in respect of their mathematical form, and the main object of the paper is to indicate a scheme of empirical analysis of, and to develop a type of formula for, the flow of water in pipes and channels. By means of tables, the general expression supplied can be rendered easy of manipulation for the purposes of practical calculation. Mr. Knibbs concludes that the law of velocity as related to temperature with at least two (or better, three) pipes of very different roughness, requires further experimental investigation. The variation of the velocity with respect to the radius of pipes also needs investigation; this evidently should be done with, at least, three series having widely different degrees of roughness, so as to ascertain the influence of the roughness upon the variation. In channel investigations the author hopes that the triangular form may be adhered to throughout; the law of flow may then be discovered, and the influence of form constituted a subsequent subject of inquiry.

AN interesting series of determinations of the local variations in the intensity of gravity in the vicinity of Mount Etna and in Eastern Sicily generally is detailed by Signor A. Riccò in the *Atti dei Lincei*, vii. (2) 1. The observations were made with the assistance of Colonel Von Sterneck's pendulums, kindly lent for the purpose by the Hydrographic Bureau of Pola, while the staff of the Observatory at Catania all took part in the work of observing. The general results obtained are somewhat remarkable. In the neighbourhood of Catania and Messina the value of gravity, reduced to sea-level, exceeds that given by theoretical formulæ by about 150×10^{-5} units, an amount equivalent, according to Helmert, to that due to a stratum of rock of density 2·5, of 1500 metres thickness. But this excess diminishes rapidly in the neighbourhood of Mount Etna, and becomes a minimum at the summit, where it is less than 50×10^{-5} units. This diminution appears somewhat difficult to explain, even on the hypothesis of the existence of large subterranean cavities within and beneath the mountain. Another remarkable result is that at Catania the deviation of the vertical is small, and in a direction away from Mount Etna; this result, however, obtains a satisfactory explanation, according to Signor Riccò, in the attraction of massive basaltic rocks of Monte Lauro to the south of the station.

AN elaborate memoir by Dr. J. Zenneck on the markings of pythons, boas, and allied genera of snakes appears in the current number of the *Zeitschrift für wissenschaftliche Zoologie*. It consists of 384 pages and eight plates, and deals especially with the nature and extent of the variation in colour-markings possible within the limits of a species. Considering the great number of specimens of each species which Dr. Zenneck has had the opportunity of examining, the work should prove a valuable addition to the literature of systematic herpetology.

THE flat fishes of Cape Colony are described by Mr. G. A. Boulenger, F.R.S., in a bulletin just published by the Department of Agriculture at the Cape. Only five kinds of flat fishes were known from the coast of South Africa until recently, when Dr. Gilchrist, the marine biologist to the Cape Government, sent Mr. Boulenger a sixth, allied to the British Scald-fish, and representing a species not only new to the South African fauna, but also new to science. All the material obtained in the course of the investigation of the marine fauna undertaken by the Cape Government will be worked up by specialists, and the results published in bulletins similar to the present one. The investigations will deal with marine biology in the widest sense of the term, including the study of conditions of life dependent on physical factors, such as currents, temperature, &c.

THE third number of the second part of the second volume of the new enlarged edition of Dr. Ostwald's "Lehrbuch der allgemeinen Chemie" has just been published by Engelmann, of Leipzig. About three more numbers have to appear before the new edition is completed, and it is announced that they will be published as soon as possible.

VOL. iii. of "Among British Birds in their Nesting Haunts," illustrated by the camera by O. A. J. Lee, has been brought to completion by the issue of Part 12 by the publisher, David Douglas, Edinburgh. This part deals with the tree-creeper, blackbird, rock-pipit, magpie, ringdove, sedge-warbler, dipper, fulmar and dunlin.

ATTENTION may appropriately be called at the present time of year to the publication of a new edition of the late Mr. John Ball's Alpine Guide, vol. i., dealing with the Western Alps. The work has been reconstructed and revised on behalf of the Alpine Club by Mr. W. A. B. Coolidge, and its place is between such a Guide for ordinary travellers as "Murray," and such a special series as the "Climbers' Guides." We shall review the new edition in a future issue, and content ourselves now with merely announcing its publication by Messrs. Longmans, Green, and Co.

A SECOND and revised edition of the standard work on "Hydrographical Surveying," by Rear-Admiral Sir William J. L. Wharton, K.C.B., has been published by Mr. John Murray. The work originally appeared in 1882, and has instructed many naval officers in the principles of marine surveying. The new edition is in the same form as the old one, but the descriptions of instruments and fittings which have changed in the interval between the two issues have been brought up to date, thus increasing the usefulness of the book for members of the nautical surveying service.

THE *Agricultural Gazette* oi New South Wales (for May) is as usual, full of valuable articles and notes. The present issue contains the continuation of articles on "The Growth of Gall-making Insects," "Bees, and how to manage them," and "The Bee Calendar," besides a number of other contributions likely to be of practical service to all who take an interest in agricultural and kindred pursuits. We notice that a series of articles especially intended as a guide for beginners in the application of science to agriculture and horticulture is to be commenced in the next number of the *Gazette.*

THE Manchester Microscopical Society may take credit to itself for the volume of *Transactions* just published. A number of interesting papers are published in the volume, and the report shows that the session in which they were read was in every respect a successful one. A paper by Mr. Mark L. Sykes, on "Natural Selection in the Lepidoptera," illustrated by eight good plates, deserves special mention. The butterflies shown upon the first two plates illustrate the mutual protection afforded by the simulation of various inedible species to each other in the same region; while the six remaining plates illustrate mimicry of inedible by edible species. Among other subjects of papers in the volume are: the Hemiptera-Homoptera, influence of light and temperature on vegetation, the functions and structures of leaves, and adaptations in plants.

THE current issue of the *National Geographic Magazine* (Washington) is a National Educational Association number, and contains many interesting and valuable contributions. Mr. W. J. McGee writes on "American Geographic Education" and "Geographic Development of the District of Columbia," and Mr. Henry Gannett, of the U.S. Geological Survey, shows, in an article entitled "Geographic Work of the General Government," how, through a number of bureaus and departments, the United States Government is engaged in promoting the study of geography in its various branches. The longest, and perhaps most valuable, contribution to the number is by Mr. G. K. Gilbert, of the U.S. Geological Survey, on the "Origin of the Physical Features of the United States." This paper was, we are told, prepared as an introduction to a course of afternoon lectures planned by the late Mr. Hubbard, to present the effect of geographic environment on the civilisation and progress of the United States.

THE twenty-ninth annual report of the Norfolk and Norwich Naturalist's Society forms an important contribution to the natural history of the district, thirteen of the fifteen papers published being of a local character. The presidential address, delivered by Mr. A. W. Preston, is mainly meteorological in character, and is accompanied by a series of ten tables indicating the highest, lowest and mean temperatures, the monthly and annual rainfall, the prevailing direction of the wind, and particulars of the duration in each quarter; all these extending over the ten years ending 1897. Mr. Southwell contributes a paper (with map) on an ancient decoy at Feltwell, and some further remarks on the Swan pit at St. Helen's, Norwich. He also records the addition of two new species of birds to the Norfolk list, viz. the Mediterranean Herring Gull (*Larus cachinnaus*) and the Tawny Pipit, bringing the number of fully recognised species of birds which have been obtained in Norfolk to 308; in addition to eight doubtful species. Mr. Gurney contributes a paper on the "Economy of the Cuckoo," in which he considers in detail some of the moot points in the life-history of this common but still mysterious bird. Mr. A. Patterson sends his usual "Natural History Notes from Yarmouth," and Mr. G. H. Harris the eighteenth consecutive report on the herring fishery at Yarmouth and Lowestoft. These notes, in the absence of any official returns on the subject, should have more than local value. An obituary notice of the late Sir Edward Newton, as former president of the Society, should be mentioned; also the fact that mainly through the instrumentality of the Society the close-time for wild-fowl, other than ducks breeding in the county, has been extended to September 1 in each year. The Society is to be congratulated on the list of its members, its financial prosperity, and the excellent work it is so successfully performing.

THE additions to the Zoological Society's Gardens during the past week include a Mozambique Monkey (*Cercopithecus pygerythrus*) from East Africa, presented by Miss Ethel Ansorge; a Squirrel Monkey (*Chrysothrix sciurea*) from Guiana, presented by Mr. R. Routledge; a Hairy Armadillo (*Dasypus villosus*) from La Plata, presented by Mr. W. Harman; a —— Ichneumon (*Helogale*, sp. inc.), an Abyssinian Guinea Fowl (*Numida ptilorhyncha*) from East Africa, presented by Mr. R. M. Hawker; a Red-masked Conure (*Conurus 1ubrolarvatus*) from Ecuador, presented by Mrs. E. Henry; a

Raven (*Corvus corax*), European, presented by Mr. H. W. Mansell; two Yellow-bellied Liothrix (*Liothrix luteus*) from India, two Grey-headed Love-Birds (*Agapornis cana*) from Madagascar, two Passerine Parrots (*Psittacula passerina*) from South America, a Yellow-rumped Seed-eater (*Crithazra chrysopyga*), a Black bellied Weaver Bird (*Euplectes afer*), a Grenadier Weaver Bird (*Euplectes oryx*), a Crimson-eared Waxbill (*Estrelda phœnicotis*), two Orange-cheeked Waxbills (*Estrelda melpoda*) from West Africa, a Superb Tanager (*Calliste fastuosa*) from Brazil, a Parrot Finch (*Erythrura psittacea*) from New Caledonia, two Red-crested Finches (*Coryphospingus cristatus*) from South America, five Amadavade Finches (*Estrelda amadava*) from India, two Chestnut-eared Finches (*Amadina castanotis*) from Australia, three Bar-crested Finches (*Munia nisora*) from Java, a Black-headed Finch (*Munia malacca*) from India, two Banded Grass Finches (*Poephila cincta*) from Queensland, two Lazuline Finches (*Guiraca parellina*) from Central America, a Red-tailed Finch (*Estrelda ruficauda*) from New South Wales, five Indian Silverbills (*Munia malabarica*) from India, presented by Mr. A. J. Aitchinson; a Common Wombat (*Phascolomys mitchelli*) from Australia, an American Siskin (*Chrysomitris tristis*) from North America, three Amphiumas (*Amphiuma means*) from North America, a Black Iguana (*Metopoceros cornutus*) from the West Indies, deposited; a Garden Dormouse (*Myoxus quercinus*), European, received in exchange; two Wapiti Deer (*Cervus canadensis*), born in the Gardens.

OUR ASTRONOMICAL COLUMN.

WOLF'S COMET.—The following is a continuation of the ephemeris of Wolf's comet as computed by Herr Thraen (*Astr. Nach.*, 3506):—

12*h*. *Berlin M.T.*

1898.	R.A. h. m. s.	Decl.	Br.
August 12	4 58 8	+16 27·9	2·4
13	5 0 41	17·1	
14	3 14	6·0	2·5
15	5 45	15 54·7	
16	8 15	43·3	2·5
17	10 44	31·6	
18	5 13 12	+15 19·6	2·5

The comet is moving in the constellation of Taurus, lying some distance to the west of Aldebaran.

DR. GILL ON SIR JOHN HERSCHEL.—We have received a reprint (from the *Cape Times*, June 24) of an address which was delivered by Dr. Gill at the prize distribution, Diocesan College, Feldhausen, on June 23 last. On this occasion Dr. Gill uncovered a portrait of Sir John Herschel, which had been presented to the school by Mr. Gordon. The same generous donor has promised also a yearly Herschel prize. In his address, Dr. Gill, after referring to the earlier life of Sir John Herschel, and pointing out how he re-examined, with instruments made by himself, the whole of the nebulæ, star clusters, and double stars which had been discovered by his father, and finished this review of the northern hemisphere, mentions how Herschel began a similar study in the southern hemisphere. "Towards the end of 1833, being then forty years of age, he sailed for the Cape, and after a voyage of sixty-three days arrived in Table Bay on January 15, 1834. He selected the house and grounds of Feldhausen for his residence, and on February 22 began the work of observation which he concluded in 1838. On his return to England he spent nine years in the arrangement, the reduction, and the publication of these Cape observations, which were printed in one splendid volume at the expense of the Duke of Northumberland." In a later part of the address Dr. Gill refers to Herschel as "the prose poet of science; his popular scientific works are models of clearness, and his presidential addresses teem with passages of surpassing beauty. His life was a pure and blameless one from first to last, full of the noblest effort and the noblest aim from the time when as a young Cambridge graduate he registered a vow 'to try to leave the world wiser than he found it'—a vow that his life amply fulfilled."

THE PARIS OBSERVATORY.—On February 8 of this year M. Lœwy presented his report of the Paris Observatory for the year 1897 to the Council of the Observatory. Perhaps the most important fact which he communicated was the reorganisation of the meridian work. Up to the present time the greater part of the *personnel* of the meridian instruments has been employed in the revisions of the zones of Lalande, a piece of work that has been pursued steadily since the year 1854; in this, no less than 600,000 observations of stars of Lalande have been made. As this great enterprise is now nearly completed, M. Lœwy points out that other problems can now be attacked, and consequently a different organisation for meridian studies becomes necessary. The three meridian instruments, according to the new scheme, are each used by two astronomers, who make, reduce, discuss and publish the observations in their own names. The meridian circle *du jardin* has been used for the absolute determination of latitude and its variations, the large meridian instrument for absolute determinations of declinations of fundamental stars, while the instruments of Gambey have been employed for filling up gaps in the observations of the stars of Lalande.

During the year 1897 as many as 16,824 meridian observations were made, together with 333 planetary observations. The large equatorial coudé has been devoted to obtaining photographs of the moon which were required to make the series complete. The present report contains a beautiful heliogravure cliché of the moon relative to a phase which presents the greatest photographic difficulties. It was obtained immediately after the sun had set, the moon then having a very low altitude and being only 4 days 6·4 hours old. The equatorials in the east and west towers have been used, as formerly, for observations of comets, minor planets, double stars, nebulæ and occultations. The photographic chart of the heavens seems to be progressing, although the year was not very suitable for such work. The catalogue, we are told, is practically finished, with the exception of some isolated clichés. In the spectroscopic research department M. Deslandres has been continuing his interesting investigations. With the large reflector of 1·20 metres and a spectroscope of three prisms he has secured 47 negatives, which will furnish the velocities in the line of sight of the star studied, and in the laboratory he has been experimenting on the question of the relationship between coronal and kathodic rays.

The report contains, further, the work of the bureau of computations, observatory and personal publications, &c.; but even a brief account of these would render this note too long.

THE FRENCH ASTRONOMICAL SOCIETY.—The *Bulletin* of this Society for the current month is devoted nearly wholly to reproductions of some lunar charts obtained by Messrs. Lœwy and Puiseux at the Paris Observatory, and numerous accounts of the nearly total eclipse of the moon which took place on the 3rd of last month. In the former, four of these most excellent lunar pictures are reproduced, and the description which accompanies them points out the most curious objects in special relation to a better understanding of the order and succession of physical forces which have been at work on our satellite. In the observations of the lunar eclipse we are presented with some excellent reproductions from photographs of the phenomenon at different stages.

THE ELECTRICAL RESISTANCE AND MICRO-STRUCTURE OF ALLOYS.

IN a note in NATURE for June 18, 1896, on "The Electrical Resistance of Alloys," Lord Rayleigh suggested that the entirely different behaviour of pure metals and of alloys with respect to the resistance which they offer to the passage through them of an electrical current, might be partly due to thermo-electric effects.

Profs. Dewar and Fleming have shown that the resistance of a pure metal tends to disappear as absolute zero is approached, and quite recently Prof. Dewar has pointed out that the resistance of platinum in boiling hydrogen is reduced nearly to $\frac{1}{11}$th of its resistance when in boiling oxygen. So far as they have been examined, alloys show no such diminution in their